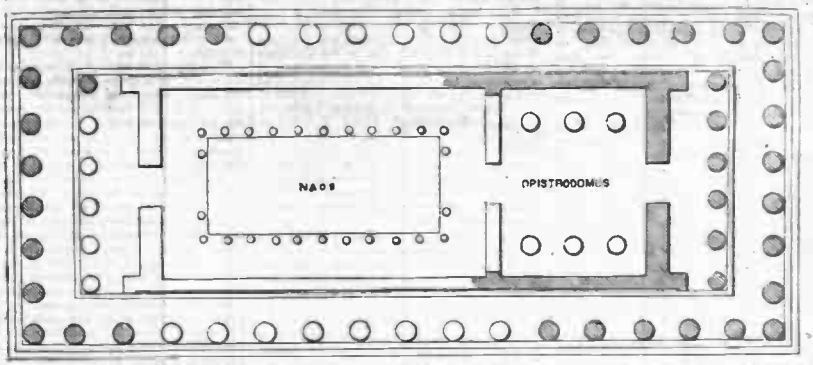
building is 101 feet,* the length 227 feet on the upper step, and the height 65 feet. The columns are 6 feet 1 inch in diameter, those at the angles are 2 inches more† the distance from column to column is 7 feet 11 inches. The sculptures of the Parthenon extended to a range of 1,100 feet, consisting of upwards of 600 figures. Behind the great porticos there are two of smaller dimensions, which are called the pronaos and posticus; these inner porticos have in each six columns. The portion of the building inclosed by the columns was divided by a cross wall into two parts, whereof the larger, called the cella or naos (ship), answered to our nave; the smaller part, in which was the public treasury, was called the opisthodomus. In this part, according to Wheeler, were six columns, but no vestige remains of them. The cell, where was placed the famous statue of Minerva by Phidias, was open to the sky in the centre‡ (whence such a temple was called hypæthal, from the Greek ὑπό, under, and αἰθήρ, æther, air), having a colonnade round it supporting a gallery above, in which was a second row of columns. These have all likewise disappeared, but the circles were traced by Stuart on the pavement wherein the lower range of columns had stood. The sculptures in the pediment of the eastern front represented the introduction of Minerva among the assembled gods, giving us an admirable idea of the mythology of the ancients, each of the deities being distinguished by his or her peculiar symbols. The metopes or spaces between the triglyphs recorded the battles between the Centaurs and the Lapithæ, a fruitful subject of illustration among poets as well as sculptors, and a favourite theme with the Greeks, from their famous heroes Hercules and Theseus bearing a prominent part in the contest; fifteen of these metopes are in the British Museum. The western pediment contained a representation of the contest between Minerva and Neptune (in the opinions of Colonel Leake and Mr. Cockerell, this contest was in the eastern pediment); but the most celebrated sculpture is that which represents the Panathenaic procession: this composition is 3 feet 4 inches high, and was continued in the frieze quite round on the outside wall of the cell of the temple. The figures in these groups, which occupy a length of 520 feet, are generally allowed to be of finer execution than those in the metopes. "With respect to the beauty of the bas-reliefs," says the great Flaxman, "they are as perfect nature as it is possible to put into the compass of the marble in which they are executed, and, that of the most elegant kind." Another sculptor, Rossi, calls them "jewels."

G. R. F.

* The Parthenon was also called Hecatompedon, signifying that its length was 100 feet.

† [To make them appear as large as the others, according to the rule given by Vitruvius, who is esteemed by the wisest modern architects, and deprecated by few besides the ignorant.—Ed.]

‡ The late Professor Willkins does not admit the probability of the Parthenon having been hypæthral, a mode of construction which he considers contrary to the religious observance of all nations of antiquity.



PLAN OF THE PARTHENON.

PETRALOGY, OR THE KNOWLEDGE OF ROCKS AND STONES.

BY HENRY G. MONTAGUE, ESQ., PROFESSOR OF NATURAL PHILOSOPHY.

(*Continued from p.* 291.)

The mountains of porphyry exhibit no stratification, but, in common with the crystallina rocks, the masses, while in their disintegrated state, appear to have been formed by one long uninterrupted sequence of events, the material being chiefly such as is supplied within the ocean waters; consisting of granular particles of sand, intermixed with the resolution of ascent animals and vegetables belonging to the ocean; and when uniting with these, the animal and vegetable matters of *terra firma* branching forth into varieties, as the accident of combination may determine. But although in mountain masses, it is presented to us only in the compact state, and wholly devoid of stratification; still, under other aspects, we find it, in common with granite and gneiss, occasionally presenting a schistose texture.

Hornstone porphyry is generally red or green, with a splintery fracture, and inclosing crystals of quartz and felspar: this kind of porphyry is very common to the deserts of Africa, and its surface, when cut and polished by art, presents a striking similitude to shell marble, the crystalline change of the organic body in decomposition obliterating the organic figure: there are other varieties which, as Leak observes, are a kind of mean between siliceous schistus and argillite. Hornstone porphyry is distinguished by its hardness, slight transparency, and want of lustre, and much of it appears to be ill cemented together, like some kinds of breccia. This variety belongs to the siliceous rocks.

Felspar porphyry, the base of which is commonly red, compact felspar, inclosing crystals of felspar and quartz, is analogous in mechanical composition to [illegible] consisting of a silico-aluminous base, uniting compact particles and crystals of granitic character, sometimes containing iron and lime, and, where hornblende is added, being known as slennitic porphyry. When the felspar predominates, it is utterly impossible to distinguish this kind of porphyry from granite, and mineralogists are very apt to confound the one with the other. Pitchstone porphyry, as its name implies, has a basis of this material, and is either red, green, brown, grey, black, or yellow, of various shades, having generally many colours at once in the same specimen. These varieties of porphyry are very common to the Egyptian and Arabian deserts, and were much used by the ancient Egyptians for tombs, and also for building and ornamental purposes: they differ from hornstone in texture, being manifestly conglomerate masses of marine earthy bodies, and particles of bodies cemented by silica, and sometimes by silica and alumina conjointly. Clay porphyry, or the argillaceous porphyry of Kirwan, has generally some shade of grey, or greenish grey, or brown, or blackish, or reddish brown, or isabella yellow. This species is allied to the argillaceous rocks, being indurated clay, cementing or uniting in its instrix crystalline felspar, or hornblende, and granular particles. This porphyry is often of very little use for building or other purposes, for the felspar or hornblende soon moulders and loses its lustre. The varieties of this kind are exceedingly numerous, embracing a variety of composition analogous to beds of common clay, or the simplicity of composition of the pure ocean marle. Kirwan distinguishes four sorts of porphyries, viz. the siliceous, argillaceous, muriatic, and calcareous, most of which may be compact, schistose, or slaty. It is certain that in soils of primary and mixed qualities, disposed within tropical regions, porphyry may be observed in all its various shades of induration and composition, and the stones used from the oceanic strata, the same rock still exhibiting varying degrees of hardness, according to the extent of exposure of its surface to atmospheric air. Its general composition in the friable state is that of sands, calcareous matter, molluscæ, and other oceanic animal and vegetable *reliquæ*; and it is governed in its changes by the same laws that govern the disposition of meaner aggregates. For instance, a number of pebbles and sand particles become united with calcareous matter lying, as it were, held together by a portion of dry mortar; in this state they are exposed to unceasing atmospheric heat without moisture; the calcareous matter silicifies, and gradually the whole is united in one inseparable mass; the several pebbles forming its component parts still continuing changing, without regard to each other, until the end to be obtained is effected. The same simplicity of change is observable in vast masses of earth; local change in the disposition and association of the bodies of which it is composed, general change produced necessarily by these local changes, and under the influence of a continuous high degree of atmospheric heat. The same kind of organic matter may undergo many changes and produce many results widely differing from each other; they may silicify as flint, decompose as sands, pass by transition into the mineral state as coal, or become converted into gems. The like versatility in nature's operations is observable in aggregate masses; thus we find the material constituent of many rocks is precisely the same, and, in numerous instances, is so mechanically, nay, in some, mathematically disposed, as to denote beyond the possibility of doubt the one common origin; and yet how different does it appear in the regular sequence of events: on the one hand, we observe it assuming the most elegant and regular crystalline arrangement; on the extreme of the other, it is a mere concrete mass, without form